

IN THE CLAIMS

1. **(currently amended)** A switching apparatus for learning a source address set in a packet in an address learning table and delivering a packet on the basis of an address learned in said address learning table, said switching apparatus comprising:

an address learning unit for limiting a number of learned addresses such that a number of learned addresses in said address learning table for each of user groups which are classified into a plurality of groups based on header information set in said packet is equal to or less than an address learning upper limit value for said user group ~~and controlling said number of learned addresses in said address learning table for each user group;~~ and

a learning number counter for storing a number of learned addresses for each user group of said plurality of said user groups in said address learning table,

wherein said address learning upper limit value is set for each user group, and said address learning unit limits the number of learned addresses of a user group judged based on a header information of a received packet in said plurality of user groups in said address learning table and updates the number of learned addresses of the user group in the learning number counter when the number of learned addresses for the user group does not exceed the address upper limit.

2. (original) The switching apparatus as claimed in claim 1,

wherein said address learning unit assigns a fixed said address learning upper limit value to each user group.

3. (original) The switching apparatus as claimed in claim 2,

wherein said address learning unit sets a value for equally allocating a maximum number of addresses learnable in said address learning table to all user groups as said address learning upper limit value for each user group.

4. (original) The switching apparatus as claimed in claim 2,

wherein said address learning unit sets a fixed value greater than a value for equally allocating a maximum number of addresses learnable in said address learning table to all user groups as said address learning upper limit value for each user group.

5. (original) The switching apparatus as claimed in claim 1,

wherein said address learning unit dynamically calculates a value for equally allocating a maximum number of addresses learnable in said address learning table to user groups currently learned in said address learning table and sets said value as said address learning upper limit value.

6. (original) The switching apparatus as claimed in claim 2,

wherein said address learning unit sets said address learning upper limit value for each user group on the basis of subscription managing information for each user group.

7. **(currently amended)** A switching apparatus for learning a source address set in a packet in an address learning table and delivering a packet on the basis of an address learned in said address learning table, said switching apparatus comprising:

an address learning unit for limiting a number of learned addresses such that a number of learned addresses in said address learning table for each user group which are classified into a plurality of groups based on header information set in said packet is equal to or less

than an address learning upper limit value for said user group and controlling said number of learned addresses in said address learning table for each user group; and

a learning number counter for storing a number of learned addresses for each user group of said plurality of said user groups in said address learning table.

wherein said address learning unit limits the number of learned addresses of a user group judged based on a header information of a received packet in said plurality of user groups in said address learning table and updates the number of learned addresses of the user group in the learning number counter when the number of learned addresses for the user group does not exceed the address upper limit, and

said address learning unit assigns a fixed said address learning upper limit value to each user group and assigns a fixed said address learning upper limit value to each user group, said address learning unit sets said address learning upper limit value for each user group on the basis of subscription managing information for each user group, said subscription managing information is a subscription band of each user group, and said address learning upper limit value is weighted according to the subscription band of each user group.

8. (currently amended) A switching apparatus for learning a source address set in a packet in an address learning table and delivering a packet on the basis of an address learned in said address learning table, said switching apparatus comprising:

an address learning unit for limiting a number of learned addresses such that a number of learned addresses in said address learning table for each user group which are classified into a plurality of groups based on header information set in said packet is equal to or less than an address learning upper limit value for said user group and controlling said number of learned addresses in said address learning table for each user group; and

a learning number counter for storing a number of learned addresses for each user group of said plurality of said user groups in said address learning table,

wherein said address learning unit limits the number of learned addresses of a user group judged based on a header information of a received packet in said plurality of user groups in said address learning table and updates the number of learned addresses of the user group in the learning number counter when the number of learned addresses for the user group does not exceed the address upper limit.

said address learning unit assigns a fixed said address learning upper limit value to each user group,

said address learning unit sets said address learning upper limit value for each user group on the basis of subscription managing information for each user group, and

said subscription managing information is a number of subscribing locations of each user group, and said address learning upper limit value is weighted according to the number of subscribing locations of each user group.

9. (original) The switching apparatus as claimed in claim 1,

wherein said address learning unit does not learn a new address of a user group whose number of learned addresses has reached said address learning upper limit value.

10. (original) The switching apparatus as claimed in claim 1,

wherein said address learning unit overwrites an address learned in said address learning table for a user group whose number of learned addresses has reached said address learning upper limit value with a new address of said user group.

11. (original) The switching apparatus as claimed in claim 10,

wherein said address learning unit overwrites an address that is learned in said address learning table for a user group whose number of learned addresses has reached said address learning upper limit value and is set in an oldest arrived packet of said user group with a new address of said user group.

12. **(currently amended)** A switching apparatus for learning a source address set in a packet in an address learning table and delivering a packet on the basis of an address learned in said address learning table, said switching apparatus comprising:

an address learning unit for limiting a number of learned addresses on the basis of a total number threshold value which is based on a number of learnable addresses by using memory of said address learning table shared with all of said user groups and an individual guaranteed value set for each of user groups which are classified into a plurality of groups based on header information set in said packet by using memory of said address learning table for guaranteeing an individual guaranteed value of each user group, so as not to allow increase in a number of learned addresses for a user group which number in said address learning table exceeds said individual guaranteed value when a total number of learned addresses learned in said address learning table reaches said total number threshold value and controlling said number of learned addresses in said address learning table for each user group; and

a learning number counter for storing a number of learned addresses for each user group of said plurality of said user groups in said address learning table,

wherein said address learning unit limits the number of learned addresses of a user group judged based on a header information of a received packet in said plurality of user groups in said address learning table and updates the number of learned addresses of the user

group in the learning number counter when the number of learned addresses for the user

group does not exceed the address upper limit.

13. (original) The switching apparatus as claimed in claim 12,

wherein said individual guaranteed value is identical for all said user groups, and a value obtained by adding together a value obtained by multiplying a value obtained by subtracting 1 from a total number of user groups by said individual guaranteed value and said total number threshold value does not exceed a maximum number of addresses learnable in said address learning table.

14. **(currently amended)** A switching apparatus for learning a source address set in a packet in an address learning table and delivering a packet on the basis of an address learned in said address learning table, said switching apparatus comprising:

an address learning unit for, on the basis of a total number threshold value which is based on a number of learnable addresses by using memory of said address learning table shared with all of said user groups and an individual guaranteed value set for each of user groups which are classified into a plurality of groups based on header information set in said packet by using memory of said address learning table for guaranteeing an individual guaranteed value of each user group, marking an address learned in said address learning table for a user group whose number of learned addresses exceeds said individual guaranteed value at a time of learning the new address, and overwriting the marked address with a new address of a user group whose number of learned addresses is less than said individual guaranteed value when a total number of currently learned addresses reaches a maximum number of addresses learnable in said address learning table ~~and controlling said number of learned addresses in said address learning table for each user group; and~~

a learning number counter for storing a number of learned addresses for each user group of said plurality of said user groups in said address learning table,

wherein said address learning unit limits the number of learned addresses of a user group judged based on a header information of a received packet in said plurality of user groups in said address learning table and updates the number of learned addresses of the user group in the learning number counter when the number of learned addresses for the user group does not exceed the address upper limit.

15. (currently amended) A switching apparatus for learning a source address set in a packet in an address learning table and delivering a packet on the basis of an address learned in said address learning table, said switching apparatus comprising:

an address learning unit for limiting a number of learned addresses such that a number of learned addresses for each of user groups which are classified into a plurality of groups based on header information set in said packet in said address learning table is equal to or less than an address learning upper limit value for said user group ~~and controlling said number of learned addresses in said address learning table is controlled for each user group; and~~

a learning number counter for storing a number of learned addresses for each user group of said plurality of said user groups in said address learning table,

wherein said address learning unit limits the number of learned addresses of a user group judged based on a header information of a received packet in said plurality of user groups in said address learning table and updates the number of learned addresses of the user group in the learning number counter when the number of learned addresses for the user group does not exceed the address upper limit, and

~~wherein~~ when a packet with a new address arrives, said address learning unit records occurrence of an event in which a number of learned addresses for a user group of the source address of said packet reaches said address learning upper limit value for said user group.

16. (original) The switching apparatus as claimed in claim 1,

wherein when a packet with a new address arrives, said address learning unit counts a number of events in which a number of learned addresses for a user group of the source address of said packet reaches said address learning upper limit value for said user group.

17. (original) The switching apparatus as claimed in claim 1,

wherein said address learning unit records the number of addresses learned in said address learning table for each said user group in a learning number counter.